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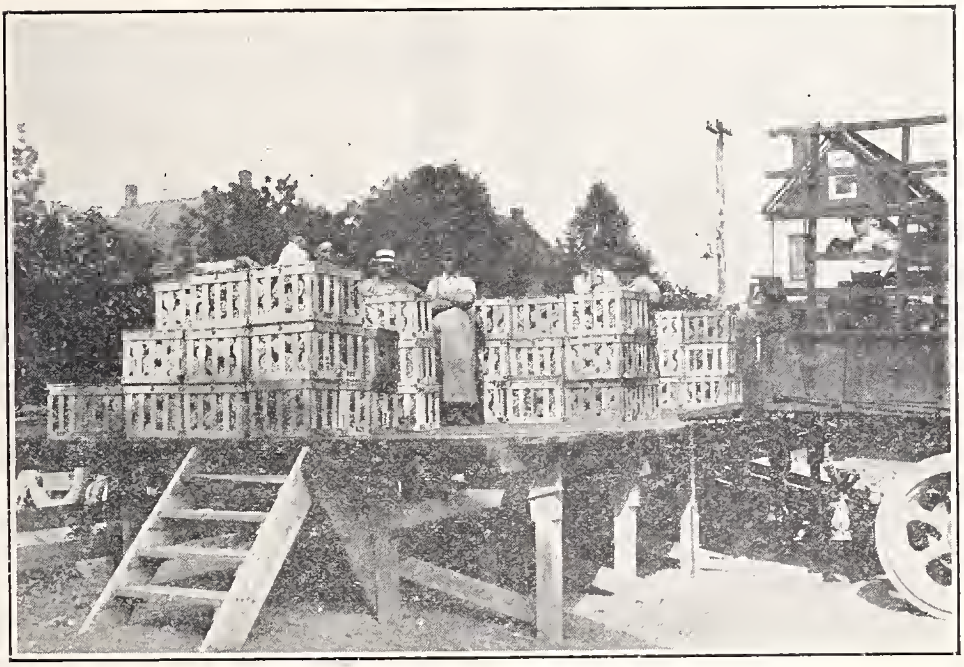
ECONOMIC TRENDS OF THE VEGETABLE INDUSTRY

By R. B. Donaldson and D. M. James
Bureau of Markets



Trucking Pennsylvania Asparagus

C. G. JORDAN, Secretary of Agriculture
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Economic Trend of The Vegetable Industry

By R. B. Donaldson and D. M. James
Bureau of Markets

Vegetable growers throughout the United States, as well as producers in many foreign countries, realize that Pennsylvania is made up of many large consuming markets. Because of these markets, nearly every state in the union ships vegetables into Pennsylvania annually, and this supply is augmented with importations from Central and South America, Canada, Europe, Africa and Asia.

While Pennsylvania cities are the market places for vegetable growers the world over, it remains a fact that these local markets afford a ready outlet for home vegetables, especially since nearness to market is an important factor in the marketing of the more perishable products.

The purpose of this publication is to place before the vegetable growers a picture of the consumer demands in Pennsylvania cities, the demands of the local canning industry for vegetables and the production of vegetables grown for sale over a period of years, and to show the correlation of these trends.

The figures on which this study is based are not entirely complete, but they furnish the most accurate data available. It is felt that they furnish a fairly general portrayal of the relation between the production and consumption of vegetables in Pennsylvania.

CARLOT RECEIPTS OF VEGETABLES

Annual Receipts—As a basis for determining the annual carlot receipts of cabbage, celery, lettuce, onions, spinach and tomatoes in Pennsylvania, the following fifteen cities have been selected (named in order of their population, according to the 1920 census): Philadelphia, Pittsburgh, Scranton, Reading, Erie, Harrisburg, Wilkes-Barre, Allentown, Johnstown, Altoona, Lancaster, Bethlehem, York, Williamsport and Easton.

The trend of carlot receipts of the six vegetables listed above for the past eight-year period (1921-1928) has been gradually upward, with a rather definite increase each year. An average of 17,124 cars of vegetables were unloaded in these fifteen cities during each of the past eight years. During 1928 a total of 18,718 cars reached these cities, lettuce leading in the number of cars unloaded, with cabbage, onions, tomatoes, celery and spinach following in the order named.

An increase in carlot unloads has been found in each of the six vegetables, but this increase is especially pronounced in spinach, celery and lettuce, showing that the consuming public is more and more coming to the use of greens for home consumption. Spinach alone showed an increase of approximately 70 per cent for the eight-year period, while celery increased about 68 per cent and lettuce showed an increase of 36 per cent.

In addition to the supply of vegetables received by rail annually, there is a large volume received by truck direct from farms in Pennsylvania or from nearby states. Data are not available to show the total amount received by trucks, but the increase in receipts would be even more pronounced if such figures were available. Trucking now holds a prominent place as a means of transporting perishable produce, and its effect upon the distribution of vegetables is being felt more each year.

Table 1—Annual Carlot Receipts of Principal Vegetables at Fifteen Pennsylvania Cities

Year	*Cabbage*	*Celery*	*Lettuce*	*Onions*	*Spinach*	*Tomatoes*	*Total*
1921	3,565	1,765	3,304*	2,745	549*	2,248	14,176
1922	4,157	1,680	3,354*	3,083	550*	2,903	15,727
1923	4,231	2,035	3,488	3,171	564	3,090	16,579
1924	4,229	2,431	3,490	3,614	593	3,052	17,409
1925	4,038	2,585	3,757	3,499	664	2,927	17,470
1926	4,034	2,423	4,129	3,489	887	2,599	17,561
1927	3,811	2,812	4,476	3,503	1,036	3,715	19,353
1928	3,939	2,967	4,502	3,315	931	3,064	18,718
Average ...	4,001	2,337	3,813	3,302	722	2,950	17,124

*Receipts for Philadelphia and Pittsburgh estimated.

Sources of Supply—The leading sources of carlot supply for cabbage, celery, lettuce, onions, spinach and tomatoes, as shown in Table 2, are outside the state. Only in the receipts of cabbage and celery does Pennsylvania rank with other competing states, placing

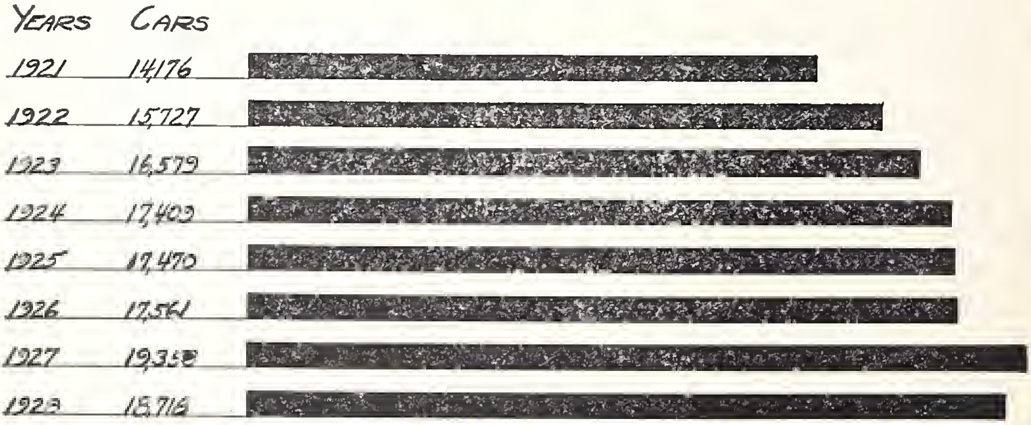

Fig. 1. Carlot Receipts of Principal Vegetables at 15 Pennsylvania Cities, 1921-1928

third in receipts of late cabbage and fifth in celery receipts. A large part of the Pennsylvania production is utilized in the immediate vicinity of the producing areas. The figures show, however, that our large terminal markets are demanding more fresh vegetables each year, so that with nearness to market, the possibility of increasing Pennsylvania production for our terminal cities is evident. Apparently there is a ready market for greater supplies of Pennsylvania vegetables in the home markets, if the competition of outside states can be met as to market preferences for variety, grade, pack and type of container.

Table 2—Leading Sources of Carlot Vegetable Supply at Fifteen Pennsylvania Cities, 1928.

Rank	*Early Cabbage*	*Late Cabbage*	*Celery*	*Lettuce*	*Onions*	*Spinach*	*Tomatoes*
1.	Texas	New York	Florida	California	Texas	Texas	Florida
2.	Virginia	Wisconsin	New York	Arizona	New York	Virginia	Texas
3.	S. Carolina	Pennsylvania	California	New York	Indiana	Maryland	Mississippi
4.	Ohio	Minnesota	Michigan	Colorado	Imports	S. Carolina	California
5.	Florida	Michigan	Pennsylvania	Florida	Michigan	New York	Tennessee

Seasonal Variation and Supply—Improved methods of marketing perishable products now in use together with the increased southern winter production of vegetables, has made possible a year-round supply of fresh produce in northern cities. Pennsylvania markets receive abundant supplies of green vegetables by rail every month in the year. These receipts are lightest during the period from June through September—the season when Pennsylvania-grown vegetables have greatest control of the markets. Methods by which Pennsylvania growers might extend the season for the profitable marketing of their vegetables in competition with shipped-in produce are worth consideration.

Table 3—Average Monthly Carlot Receipts of Principal Vegetables at Fifteen Pennsylvania Cities, 1921-1928.

Month	*Cabbage*	*Celery*	*Lettuce*	*Onions*	*Spinach*	*Tomatoes*	*Total*	
							Cars	*Per Cent*
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*		*P. c. t.*
January	347	294	291	267	72	46	1,317	8.2
February	335	261	277	248	98	96	1,315	8.1
March	425	298	316	256	144	233	1,672	10.5
April	448	228	359	257	134	362	1,788	11.2
May	525	112	354	339	25	547	1,902	11.8
June	433	40	126	215	1	801	1,616	10.1
July	139	22	182	163	...	467	973	6.1
August	53	66	203	237	...	241	800	4.9
September,	166	132	201	375	1	10	885	5.6
October	371	226	175	407	12	35	1,226	7.6
November	453	248	200	301	31	67	1,300	8.1
December	311	315	292	234	71	45	1,268	7.8

Chief of these are forcing, the use of earlier or later maturing strains, and storing in either cold or common storages awaiting price advances. The forcing industry is of considerable importance in the Commonwealth, being centered near the larger cities such as Philadelphia, Pittsburgh, Altoona, Johnstown, Erie and Wilkes-Barre. According to the 1920 census, Pennsylvania ranked third of all states in receipts from sale of greenhouse vegetables and plants.

Carlot Shipments—Truck crops grown for carlot shipments from Pennsylvania producing sections seem insignificant in comparison to the large quantities of vegetables consumed in the Commonwealth, although the much greater volume moved to market by truck and for which no figures are available, would show a more favorable relation between the Pennsylvania production and consumption. Nevertheless, furnishing a larger proportion of the vegetables consumed in the Commonwealth suggests a promising field open to Pennsylvania vegetable growers. The competition from other states is becoming increasingly keen, however, and carefully graded and well-packed vegetables in

Table 4—Carlot Shipments of Vegetables from Pennsylvania Points, 1917-1928

	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Total	336	370	754	608	714	720	651	883	1245	897	669	464
Cabbage	135	73	336	222	288	348	312	295	642	509	413	300
Celery	102	169	33	188	224	212	223	225	208	194	169	71
Lettuce	34	32	8	23	36	34	22	17	18	36	25	3
Onions	62	62	145	124	142	114	91	72	54	66	29	23
Spinach	...	...	...	1	2	...	...	...	3	2	4	8
Tomates	3	34	232	50	22	12	3	274	320	90	29	59

Fig. 2. Forcing Lettuce Near Philadelphia

attractive packages are the most effective means of meeting the market preferences.

Asparagus, cabbage, celery, lettuce, onions and tomatoes constitute the principal truck crops grown in Pennsylvania for shipment or for local markets. For the most part these crops are consumed in the immediate vicinity of the producing area. This is especially true in the Philadelphia and Pittsburgh districts, where practically all the crops grown are utilized by the home markets.

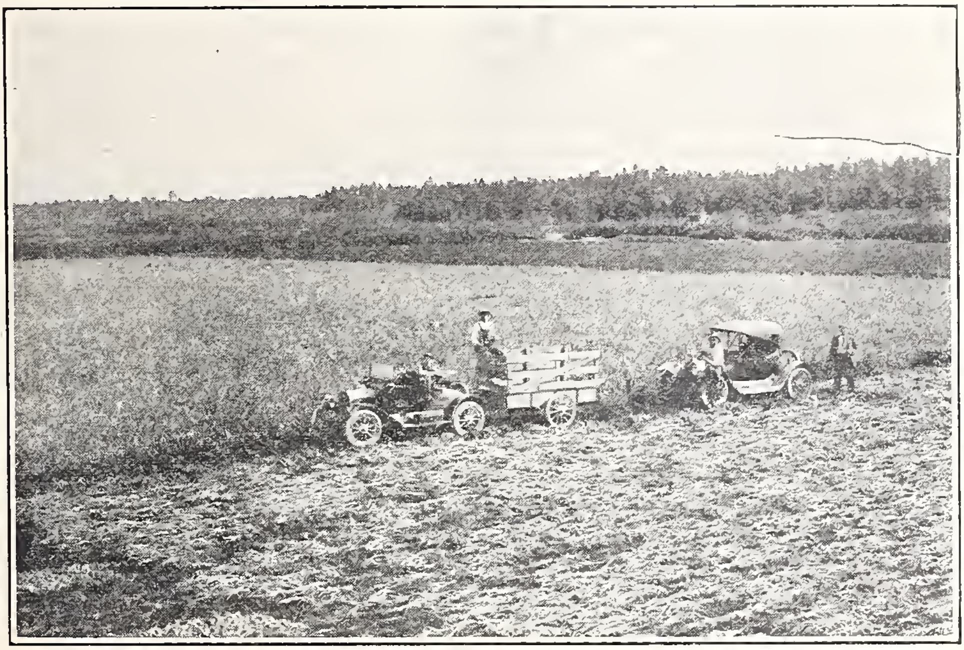

Fig. 3. Harvesting Onions in North-western Pennsylvania

Over a period of years, 1918 to 1928 inclusive, the trend in commercial production of truck crops for fresh consumption has been gradually downward. Of these crops, lettuce, celery and asparagus have had a tendency to maintain a uniform production, with celery and lettuce showing a slight upward trend over the eleven-year period. However, the increase in production of these two commodities has not been enough to offset the apparent downward trend of cabbage, onions and tomatoes. Onions and tomatoes have shown the most decided decrease in production. However, this downward trend in tomatoes can be accounted for partly by the increase in production of tomatoes for manufacturing purposes, since part of the tomato acreage in the Commonwealth has gone over to the canning industry.

The decrease in Pennsylvania production of truck crops is probably the result of increased receipts from competing states. Vegetables, similar to those grown in Pennsylvania are shipped in carlot quantities into our larger cities from sources outside the state. Most of these shipments are well graded and appear on the market in attractive containers, with well established brands and trade names. This is especially true of lettuce and tomatoes. For Pennsylvania producers to meet this keen competition from out of State, they must recognize the fact that many competing sections of the country have learned the value of grading, uniform packing, and advertising. Since Pennsylvania products must be put through the same channels of trade as those from outside the state, these better marketing practices become very important.

Fig. 4. Picking Stringless Beans for Canning in South-Central Pennsylvania

LEADING COUNTIES IN PRODUCTION

The location of the leading vegetable producing counties in Pennsylvania shows that the greatest production is centered around our larger cities. Allegheny County leads in the production of onions, sweet corn and tomatoes, with Philadelphia County being first in lettuce and Erie County being the heaviest producer of cabbage.

Practically none of the truck crops grown in Allegheny and Philadelphia Counties ever reach distant markets, as the bulk of these crops is being consumed by the local markets at the present time. This probably accounts for the lack of uniform grading and standard containers used in marketing much of the Pennsylvania vegetable production. The demand for home grown vegetables would be greatly increased if more of our produce appeared on the market representing the same degree of careful grading and packing as is shown in most of the receipts from out of the State.

TRUCK CROPS FOR MANUFACTURE

The outstanding development in the vegetable industry of Pennsylvania for the past few years has been in the increased production of vegetables for manufacture. The production of snap beans, corn, peas, and tomatoes for canneries has taken an important place in the agriculture of several counties of the State. Canneries offer a ready outlet for truck crops, because of their proximity to the producing area and the elimination of many marketing problems.

The canners as well as the farmers of the State are making every effort to advance the canning industry of the Commonwealth through the production of more canned goods of superior quality. The recent development of buying cannery products on the basis of grades, has been an important step toward higher quality production. By this method of purchase, the producer is paid according to the quality of the raw produce which he delivers, which furnishes the most fair basis for price determination.

The most decided increase in Pennsylvania vegetables for cannery consumption has been in snap beans, corn, peas and tomatoes. Snap beans and tomatoes have shown a more pronounced increase than corn or peas, although the trend of these last two products has been steadily upward.

RELATION OF RECEIPTS TO PRODUCTION

The relative importance of truck crops grown for sale, truck crops for canning and carlot receipts of six vegetables at fifteen markets is shown in Fig. 6. It will be noted that for the period from 1918 to 1928 inclusive, the trend of truck crops grown for sale has been gradually downward, whereas the trend of truck crops for canning and carlot receipts has been decidedly upward.

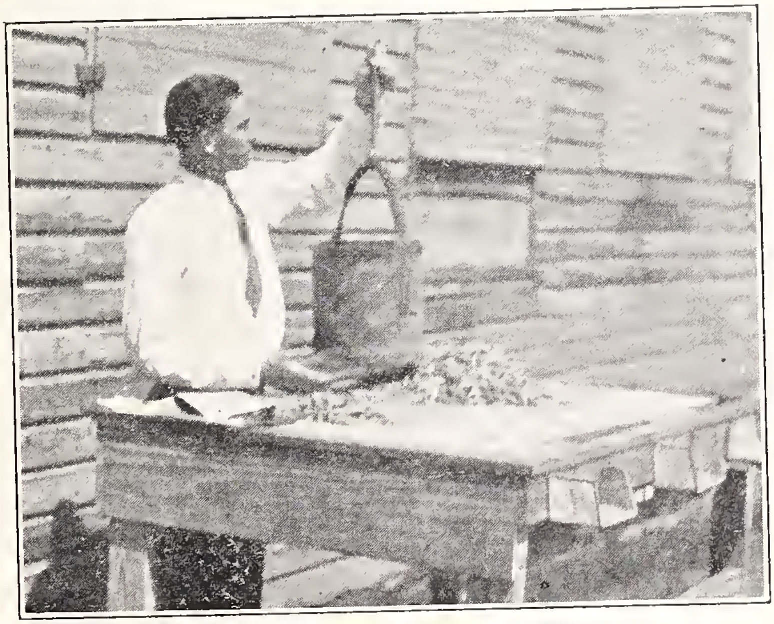

Fig. 5. State Inspector Classifying Beans at Pennsylvania Cannery

Competition between the canned vegetable industry and fresh vegetables is becoming more keen each year. But even with this competition, carlot receipts of fresh vegetables are keeping pace with the upward trend of truck crops for canning.

There is a real opportunity for Pennsylvania producers of truck crops to extend their home markets, as shown by the increased volume of carlot receipts of fresh vegetables. Pennsylvania cities should be the outlet for more home-grown products. The demand for such products is evident. To utilize these markets to the fullest extent, it is essential that Pennsylvania growers furnish produce which the consumers demand.

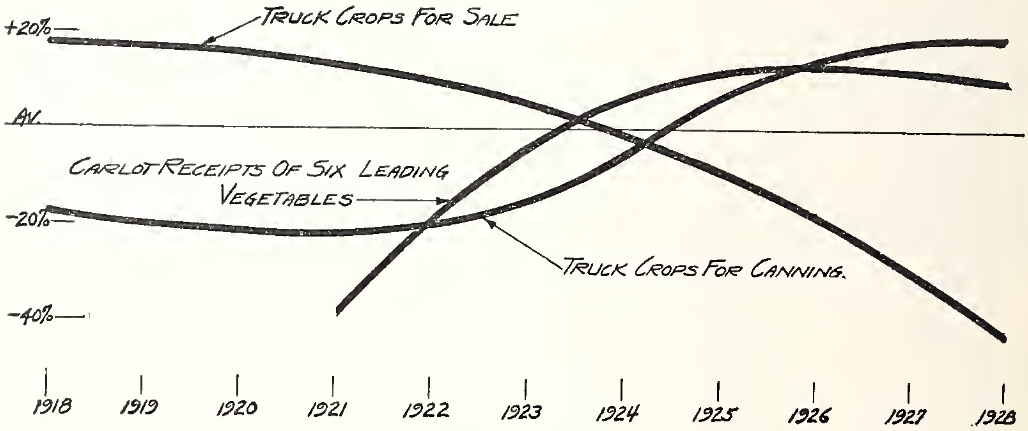

Fig. 6. Trends of Carlot Receipts, Truck Crops for Canning and Truck Crops for Sale, 1919-1928

Table 5—Truck Crops Grown for Sale, 1918-1928*

From Bulletin 445, Pennsylvania Department of Agriculture

Year	*Truck Crops for Shipment*							*Truck Crops for Canning*				
	Total	*Asparagus*	*Cabbage*	*Celery*	*Lettuce*	*Onions*	*Tomatoes*	*Total*	*Snap Beans*	*Corn*	*Peas*	*Tomatoes*
	1000 pounds	1000 pounds	1000 pounds	1000 pounds	1000 pounds	1000 pounds	1000 pounds	Tons	Tons	Tons	Tons	Tons
1918	85,382	1,272	49,600	3,000	420	3,550	27,540	24,000	900	9,100	1,200	12,800
1919	61,228	1,248	43,800	3,250	420	4,950	7,560	18,800	1,000	8,700	900	8,200
1920	87,320	1,200	59,800	2,950	480	6,150	16,740	24,400	300	7,500	300	16.300
1921	48,946	1,176	32,600	3,550	720	4,600	6,300	8,000	300	3,000	400	4,300
1922	84,000	1,320	44,800	3.150	600	6,650	27,480	17,800	500	5,400	300	11,600
1923	40,316	1,176	27,600	5,800	540	2,800	2,400	22,100	900	4,900	500	15,800
1924	57,402	1,392	30,200	6,400	300	4,050	15,060	20,400	1,200	6,400	1,300	11.500
1925	82,030	1,320	38,800	5,600	660	2,650	33,000	53,900	2,600	24,700	800	25,800
1926	43,252	1,632	31,600	4,400	720	2,500	2,400	22,300	1,200	9,700	1,300	10,100
1927	43,130	1,080	30,200	4,050	600	2,700	4.500	25,500	1,400	3,600	1,800	18,700
1928	30,524	1,104	20,000	3,550	540	1,850	3,480	26,230	2,200	3,600	1,530	18,900

*Exclusive of local market garden and general farm production.

Table 6—Leading Counties in Acreage of Cabbage, Lettuce, Onions, Sweet Corn and Tomatoes (1925 Federal Census)

Rank	*Cabbage*		*Lettuce*		*Onions*		*Sweet Corn*		*Tomatoes*	
	County	*Acres*	*County*	*Acres*	*County*	*Acres*	*County*	*Acres*	*County*	*Acres*
1	Erie	1,160	Philadelphia	237	Allegheny	115	Allegheny	3.969	Allegheny	1.385
2	Allegheny	723	Allegheny	182	Crawford	77	York	3,540	York	1,109
3	Luzerne	375	Bucks	38	Bucks	68	Bucks	2.661	Erie	673
4	Lackawanna	374	Delaware	32	York	64	Adams	1,829	Franklin	418
5	Schuylkill	372	Luzerne	32	Philadelphia	52	Lancaster	1.602	Luzerne	306
6	Cambria	332	Erie	27	Schuylkill	41	Montgomery	1,084	Bucks	234
7	Westmoreland	305	Tioga	22	Lancaster	35	Westmoreland	1,077	Montgomery	227
State Acreage		7.597		862		1.062		27,872		7,322

Table 7.
Truck Crops For Shipment: Estimated Commercial Acreage, Production and Value, Pennsylvania, 1918-1928.

From Bulletin 445, Pennsylvania Department of Agriculture

ASPARAGUS FOR TABLE

Year	*Acreage*	*Yield Per Acre*	*Production*	*Average Price*	*Farm Value*
		*Crates**	*Crates**	*Per Crate*	
1918	680	78	53,000	...	......
1919	700	74	52,000	$6.50	$338,000
1920	710	70	50,000	7.50	375,000
1921	720	68	49,000	4.25	208,000
1922	700	78	55,000	7.20	396,000
1923	750	65	49,000	4.28	210,000
1924	800	72	58,000	4.62	268,000
1925	1,000	55	55,000	3.53	194,000
1926	1,000	68	68,000	2.74	186,000
1927	1,000	45	45,000	3.22	145,000
1928	1,200	38	46,000	2.27	104,000

*Containing 24 pounds.

CABBAGE, INCLUDING FOR KRAUT

		Tons	*Tons*	*Per Ton*	
1918	2,700	9.0	24,800	...	......
1919	2,740	8.0	21,900	$20.00	$438,000
1920	2,905	10.3	29,900	12.00	359,000
1921	2,720	6.0	16,300	31.55	514,000
1922	2,800	8.0	22,400	15.22	341,000
1923	2,750	5.0	13,800	23.84	329,000
1924	1,680	9.0	15,100	10.00	151,000
1925	1,940	10.0	19,400	21.78	423,000
1926	1,740	9.1	15,800	20.19	319,000
1927	1,300	11.6	15,100	20.33	307,000
1928	1,300	7.7	10,000	26.40	264,000

CELERY**

		Crates	*Crates*	*Per Crate*	
1918	200	300	60,000	$2.67	$160,000
1919	180	360	65,000	3.33	216,000
1920	180	330	59,000	4.00	236,000
1921	200	357	71,000	3.00	213,000
1922	200	315	63,000	2.21	139,000
1923	400	290	116,000	1.53	177,000
1924	380	337	128,000	2.67	342,000
1925	380	294	112,000	1.11	124,000
1926	260	337	88,000	1.46	128,000
1927	280	289	81,000	1.42	115,000
1928	270	262	71,000	1.83	130,000

**New York Crate—two-thirds size.

LETTUCE

Year	*Acreage*	*Yield Per Acre*	*Production*	*Average Price*	*Farm Value*
		Crates	*Crates*	*Per Crate*	
1918	50	142	7,000	$2.88	$20,000
1919	50	132	7,000	3.84	27,000
1920	60	132	8,000	3.08	25,000
1921	60	192	12,000	4.46	54,000
1922	60	162	10,000	1.80	18,000
1923	60	150	9,000	2.00	18,000
1924	70	75	5,000	2.17	11,000
1925	70	152	11,000	2.50	28,000
1926	80	150	12,000	1.24	15,000
1927	80	131	10,000	1.50	15,000
1928	80	114	9,000	2.70	24,000

ONIONS

		Bushels	*Bushels*	*Per Bu.*	
1918	250	283	71,000	......	....
1919	330	300	99,000	$1.62	$160,000
1920	350	350	123,000	.32	39,000
1921	340	270	92,000	2.00	184,000
1922	350	380	133,000	.68	90,000
1923	280	200	56,000	1.42	80,000
1924	250	325	81,000	.88	71,000
1925	190	278	53,000	1.61	85,000
1926	180	275	50,000	.95	48,000
1927	180	300	54,000	.75	40,000
1928	150	247	37,000	1.10	41,000

TOMATOES FOR TABLE

		Bushels	*Bushels*	*Per Bu.*	
1918	3,670	125	459,000	......	....
1919	980	129	126,000	$1.41	$178,000
1920	1,570	178	279,000	1.69	472,000
1921	590	178	105,000	1.09	114,000
1922	2,140	214	458,000	1.76	806,000
1923	1,680	143	40,000	2.00	480,000
1924	1,350	186	251,000	1.25	314,000
1925	2,570	214	550,000	.81	445,000
1926	370	107	40,000	.59	24,000
1927	420	178	75,000	.60	45,000
1928	450	130	58,000	.92	53,000

Table 8.

Truck Crops for Canning & Manufacture: Estimated Commercial Acreage, Production and Value, Pennsylvania, 1918-1928.

From Bulletin 445, Pennsylvania Department of Agriculture

SNAP BEANS

Year	*Acreage*	*Yield Per Acre*	*Production*	*Average Price*	*Farm Value*
		Tons	*Tons*	*Per Ton*	
1918	460	1.9	900	....	......
1919	410	2.4	1,000	$57.09	$57,000
1920	200	1.4	300	57.49	17,000
1921	130	2.2	300	57.43	17,000
1922	240	2.2	500	40.00	20,000
1923	430	2.0	900	40.00	36,000
1924	480	2.6	1,200	45.00	54,000
1925	1,320	2.0	2,600	48.75	127,000
1926	1,010	1.2	1,200	41.83	50,000
1927	890	1.6	1,400	50.98	71,000
1928	1,060	2.1	2,200	58.33	128,000

SWEET CORN

		Tons	*Tons*	*Per Ton*	
1918	5,060	1.8	9,100	....	......
1919	3,970	2.2	8,700	$18.50	$161,000
1920	3,430	2.2	7,500	17.00	128,000
1921	1,120	2.7	3,000	14.00	42,000
1922	2,260	2.4	5,400	10.00	54,000
1923	2,580	1.9	4,900	11.33	56,000
1924	3,200	2.0	6,400	17.72	113,000
1925	6,850	3.6	24,700	18.93	468,000
1926	4,840	2.0	9,700	13.00	126,000
1927	2,800	1.3	3,600	12.00	43,000
1928	3,640	1.0	3,600	13.76	50,000

GREEN PEAS

		Tons	*Tons*	*Per Ton*	
1918	1,170	1.0	1,200	....	......
1919	900	1.0	900	$60.00	$54,000
1920	340	.8	300	58.00	17,000
1921	290	1.4	400	60.00	24,000
1922	360	.8	300	64.00	19,000
1923	510	1.0	500	56.67	28,000
1924	1,280	1.0	1,300	60.00	78,000
1925	1,690	.5	800	60.00	48,000
1926	1,400	.9	1,300	58.89	77,000
1927	1,320	1.4	1,800	58.00	104,000
1928	1,680	.9	1,530	60.00	92,000

TOMATOES

Year	*Acreage*	*Yield Per Acre*	*Production*	*Average Price*	*Farm Value*
		Tons	*Tons*	*Per Ton*	
1918	3,670	3.5	12,800	....	......
1919	2,280	3.6	8,200	$20.86	$171,000
1920	2,360	6.9	16,300	23.20	378,000
1921	890	4.8	4,300	11.83	51,000
1922	2,140	5.4	11,600	11.20	130,000
1923	3,300	4.8	15,800	12.74	201,000
1924	2,500	4.6	11,500	14.98	172,000
1925	4,780	5.4	25,800	16.00	413,000
1926	3,370	3.0	10,100	13.40	135,000
1927	3,740	5.0	18,700	14.24	266,000
1928	5,240	3.6	18,900	14.24	269,000